REMARKS

Summary of the Office Action

Claims 1-6 are pending in the application.

Claims 1-3, 5 and 6 are rejected under 35 U.S.C. § 102(e) as being anticipated by Tsuchiya (U.S. Patent 6,812,781).

Claim 4 is rejected under 35 U.S.C. § 103 as being unpatentable over Tsuchiya.

These rejections are respectfully traversed.

Analysis of the Claim Rejections

In rejecting claim 1, the Examiner provides analysis purporting to show that Tsuchiya teaches all of the claimed elements. Applicant respectfully submits that claim 1 is not anticipated by Tsuchiya because Tsuchiya does not disclose each and every element of this claim.

In more detail, claim 1 recites, in combination with other elements:

> an output circuit part for adjusting each magnitude of the differential current and the inverted differential current based on a predetermined ratio size of MOS transistors of the output circuit part, to output an adjusted differential current and an adjusted inverted differential current, adding the adjusted

differential current and the adjusted inverted differential current, and producing an output current in a push-pull form.

In rejecting claim 1, the Examiner cites elements C1, R1, 50 and C2, R2, 52 of Fig. 2 of Tsuchiya as disclosing the output circuit part. Further, the Examiner states that Tsuchiya discloses adjusting each magnitude of the differential current and the inverted differential current based on a predetermined ratio size of MOS transistors of the output circuit and supports this statement by saying that transistors 50 and 52 are predetermined size MOS transistors.

Applicant respectfully submits, however, that there is no teaching in Tsuchiya regarding the ratio size of the transistors 50 and 52. Additionally, Applicant submits that changing the ratio size of the transistors 50 and 52 would adjust the magnitude of the current and transistor 18 (and 38) and transistor 16 (and 36).

Tsuchiya does not anticipate claim 1, or dependent claims 2-3 and 5-6, at least because Tsuchiya fails to disclose the claimed output circuit part.

Turning to the rejection of claim 4 under 35 U.S.C. § 103 as being unpatentable over Tsuchiya, claim 4 depends from claim 3 and recites that the fully differential operational amplifier has input terminals formed with NPN bipolar transistors in a left to right symmetry. In rejecting claim 4, the Examiner admits that Tsuchiya does not disclose that the input transistors are bipolar transistors. The Examiner concludes, however, that it would have been obvious "to implement the differential input transistor of Tsuchiya by bipolar transistor, since it was known

in the art that differential input bipolar transistors or MOS input transistor is a common know knowledge in the art for implementing differential amplifier."

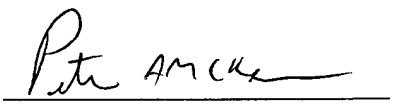
The Examiner has provided no motivation, however, for substituting bipolar transistors for the transistors 16 and 18 of Tsuchiya. Beginning at col. 4, line 46, Tsuchiya discloses that the NMOS transistors 16 and 18 constitute a first differential pair having a driving ability difference between each of the transistors due to a size difference. One example is that while the NMOS transistors 16, 18 have an equal channel length L of 7 μm, the channel width W of NMOS transistor 16 is 25 μm, whereas the channel width W of NMOS transistor 18 is 28 μm. Thus, the NMOS transistor 18 is greater in driving ability then NMOS transistor 16. There is no teaching or suggestion in Tsuchiya that bipolar transistors could or should be used to achieve the effect of the NMOS transistors 16 and 18.

Applicant submits that claim 4 is not rendered obvious by Tsuchiya at least because Tsuchiya fails to teach or suggest the claimed output circuit part of claim 1 and the fully differential operational amplifier having input terminals formed with NPN bipolar transistors in a left to right symmetry.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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